OSMOS provides key information on the stability and overall behavior of structural assets so managers can make decisions on the asset’s operability, availability and maintainability and ensure its safety.

In order to detect changes in the structure, OSMOS installs various types of sensors. These include our Optical Strands™ composed of braided fiber optics which, when subjected to strain such as compression or tension, form micro-curvatures which are converted into deformation measurements.

The digital signals and data are transmitted either through wired-based systems (OSMOS EDAS) and/or wireless systems (LIRIS). This information is then processed using advanced hardware, software systems and innovative mathematical and statistical algorithms to produce valuable information for structural asset management.

OSMOS is a company specialized in structural behavior analysis. We give structural asset managers, engineering and construction companies the ability to continuously track the health of their structures in real time.

Our fiber optic solutions called Optical Strands™ enable our clients to reduce their costs through a predictive maintenance approach.

• Comprehensive overview of structures tracked by OSMOS
• Customized reports and event alerts
• Guidance and support throughout the structure’s life cycle

OSMOS Group is a subsidiary of EREN Group, an expert in the natural resource economy, with its group of companies:

OSMOS offers managers information about the behavior of their structures over time:
• Continuous monitoring of structures
• Studies and statistics
• Customized reports and event alerts
• Preventive and predictive maintenance strategy to optimize investments
• Technical assistance and support

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### Structural Asset Management Solutions

**LIRIS Wireless Data Acquisition System**

- **External Sensors Ready:**
  - Accelerometers
  - Anemometers
  - Weathervanes
  - Extensometers
  - Hygrometers
  - Tiltmeters
  - Piezometers
  - Temperature probes
  - Strain gauges
  - Lasermeter

- **Alert/Alarm:**
  - On-site alarms: Rotating lights, sirens, barriers, etc.
  - On-site alarms: Remote access with LIRIS Box

**OSMOS Expert Data Acquisition System**

- **Secure Cloud:**
  - Data servers in France

**Data Transfer**

- **4G/5G LAN Push**
- **Online & Local Access**
- **On Site Alarm**
- **Email/SMS Alert**
- **Real Time Camera**
- **On Site Radio Access**
- **Online Remote Access with LIRIS Box**
- **SMS Alert Push**

**Monitoring Devices**

- **Thermal Correction**
- **Weigh-in-Motion & Deformation**
- **Fatigue Analysis**
- **Stationarity Test**
- **Reverse Modeling**

**Analysis & Reporting**

- **Database & Storage**

**Project Risks**

- **Evolving Pathology**
- **Latent Pathology**
- **Dynamic Effects**
- **Aging of the Structures**
- **Variable Loads**
- **Superimposed Loads**
- **Self Weight**
- **Subsoil Effects**
- **Seismic Effects**
- **Climate Effects**
- **Effects of Nearby Operations**

**ONLINE**

- **Alarm**
- **Push**
- **Email/SMS Alert**
- **Real Time Camera**
- **Online & Local Access**
- **Remote Access**

**ONSITE**

- **Alarm**
- **Radio Access**
- **Onsite Access**

**Live & Local Access**

- **Onsite Access**
- **SMS Alert Push**

**Secure Cloud**

- **Data Servers in France**

**Main Powered**

- **Real Time Data**
- **Continuous Monitoring**
- **Up to 100Hz Acquisition**

**Wireless**

- **Portable Mini Station & Power Supply**
- **Up to 18 Months Battery Life**
- **6 Months Internal Storage**

**Up to 100Hz Data Acquisition**

- **LIRIS Expert Data Acquisition System with Wired Optical Strands**
- **LIRIS Wireless Data Acquisition System with Radio Communication**
- **LIRIS v2 Optical Strands with Radio Communication**
- **LIRIS v3 Optical Strands with Bluetooth LOW Energy**

**LIRIS Box Gateway**

- **Sms Alert Module**

**LIRIS Extensometer**

- **LIRIS Wireless Tiltmeter**

**6 Months Internal Storage**

- **Up to 18 Months Battery Life**
- **Portable Mini Station & Power Supply**
- **Real Time Data**
- **Continuous Monitoring**
- **Up to 100Hz Acquisition**
CONTROL STRUCTURAL RISKS & MAINTAIN SAFETY

- Detection of structural problems
- Deformations & cracks
- Bearing conditions
- External stresses

DETECT AND ANTICIPATE RISKS AND EMERGING PATHOLOGIES

- Climate events
- Atypical situations
- Earthquakes

AVOID HAVING TO CLOSE AND/OR SHUT DOWN OPERATIONS

- Anticipate changes
- Monitoring tunneling work above the monuments

EXTEND STRUCTURAL LIFESPANS

- Maintenance/Rehabilitation
- Adjacent structure monitoring
- Neighboring survey procedure
- Underpinning

EXTEND THE LIFE OF YOUR STRUCTURES THROUGH TARGETED CORRECTIVE ACTIONS

- Monitoring the structure, bearing, style and use of the monument
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PERFORM MAINTENANCE AND/OR REHABILITATION WORKS AT THE RIGHT TIME, AND MANAGE PRIORITIES

- Schedule corrective operations and significantly reduce major maintenance costs

YOUR ASSETS ON THE RIGHT TRACK

- OSMOS is specialized in the early detection and identification of abnormal behavior on high-use structures.
- Our monitoring system lets you check structural risks and maintain assets in operating condition.
- We provide key information that enables our clients to carry out maintenance and preemptive repairs instead of reacting to emergencies.
SOLID KNOWLEDGE OF AN INFRASTRUCTURE’S STRUCTURAL BEHAVIOR IS CRUCIAL FOR OPTIMIZING ITS MAINTENANCE AND USE.

To accurately qualify the actual behavior of civil engineering structures over time, OSMOS offers an approach that combines continuous measurements taken on-site with statistical and mathematical analyses and models. The exhaustive measurements taken over time provide an overview of the actual effects of different phenomena on the structures: temperature, live loads, variations, vibrations, etc. Pertinent interpretation can then identify the infrastructure’s real characteristics and study their evolution.

Avoid structural problems caused by improper operations

Infrastructure is exposed to a significant number of specific constraints linked to operating conditions, traffic and environment. Monitoring those structures ensures ongoing operation and better use.

Target structural issues and necessary remedial work

OSMOS solutions can be used to detect signs of instability and monitor changes in the most sensitive components of the structure to help managers make decisions and plan remedial work.

Continuously track structural deformation

OSMOS real-time monitoring also stores static measurements, corresponding to the structure’s long-term behavior. Continuous tracking is necessary to anticipate trends and preserve the structure’s availability.

HOW TO MAINTAIN SERVICEABILITY

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OSMOS solutions enable managers to optimize structure management-related costs and monitor the real impact of the environment.

Buildings such as high-rise structures, historical monuments, plants and schools are complex structures subject to specific constraints including a special sensitivity to climate variations and differential settlement. In the case of high-rise buildings, structural failures can have serious consequences for user safety and involve significant strengthening and maintenance costs. OSMOS solutions can optimize maintenance operations and ensure the continuity of operations.

Avoid permanent damage caused by structural factors

At different stages of their life cycle, structures face many internal constraints that may affect their mechanical behavior and stability and cause irreversible consequences. OSMOS provides objective and conclusive information on the structure’s behavior, analyzes the cause and origin of damage, and removes doubt to support managers in their decision-making process.

Avoid permanent damage by monitoring the environment’s impact on the structure

Temperature, loads, earthquakes and strong winds are examples of external constraints that may cause irreversible damage to buildings. OSMOS provides solutions to measure the impact of the environment and assess the actual effect on the structure. Our reports provide managers with key information enabling them to optimize maintenance and maintain their buildings in good operating conditions.

Our solution for structures located in potential risk zones

In the case of structures exposed to earthquake risk, the SANLIEN PAlert+ (part of our OSMOS solution system) detects early structural risks and sends alerts to warn and protect people, and to protect the structure before the event occurs.

In the case of buildings situated in seismic areas, OSMOS SANLIEN «OSL» is a worldwide recognized solution provider to offer an integrated solution. OSL features a system to monitor your assets before, during and after an earthquake, in addition to providing early warning of earthquakes to protect your structures and equipment.
OSMOS analyzes the real capacity of facilities by informing the manager about the structural characteristics.

Industrial facilities fulfill essential functions. Regular mandatory checks are designed to verify the condition of the structure and assess the impact of its stresses. OSMOS supports managers in servicing and maintaining industrial facility operability to ensure the continuity of economic, agricultural and industrial activities.

Examples of our work

- Overhead traveling crane, cement plant, France
- Extending the useful life of the overhead traveling crane by drawing up a behavior logbook
- Liquid gas tanks, Hamina, Finland
- Monitoring fatigue in the tanks

Avoid accelerated deterioration of facilities

The system monitors actual facility behavior during operation. The installation of OSMOS monitoring solutions in industrial facilities helps to define the best operating conditions.

Avoid rough shutdowns

OSMOS real time monitoring aims to improve how the facilities are run, bolster decision-making regarding conditions of use, and guide the client’s future management of the facilities. OSMOS provides key information that allows managers to anticipate breakdowns and helps them to optimize their maintenance.

Optimize maintenance costs by tracking

By continuously tracking the evolution of structural deformations on industrial facilities, OSMOS enables managers to optimize their maintenance costs and significantly improve their availability rate. At the same time, OSMOS reports help managers decide whether to extend their facility’s lifespan.
On SAFE Works, you can enjoy access to a complete structure management toolbox: securing operations, optimizing maintenance, postponing major work, viewing behavioral monitoring logs, etc.

If your structure is exposed to frequent exceptional convoys crossing, you can use SAFE WiM+D module which analyses the dynamic measurements to monitor the convoys passing over your infrastructure. It can be enriched by the installation of real-time cameras to identify vehicles.

In order to protect your industrial facilities, SAFE Works brings you key information about the structural health of each facility. In the case of an imminent risk, you can perform an emergency shutdown to preserve your assets.

OSMOS SANLIEN "OSL" is equipped with an SMS or email notification system to signal early earthquake detection or a set threshold breach, as defined on SAFE Works.
MONITORING STRUCTURES
FOR SAFETY
IS OUR BUSINESS